

Erectile Dysfunction



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Sexual Health Problems Important



- **common**
- **increasing treatable in the FP Setting**
- **manifestation of significant disease**
- **marker for disease severity & progression**
- **hinder co-existing dz management**
- **impact on quality of life**
- **will see questions on Board Exam**

Sexual Dysfunction is Common



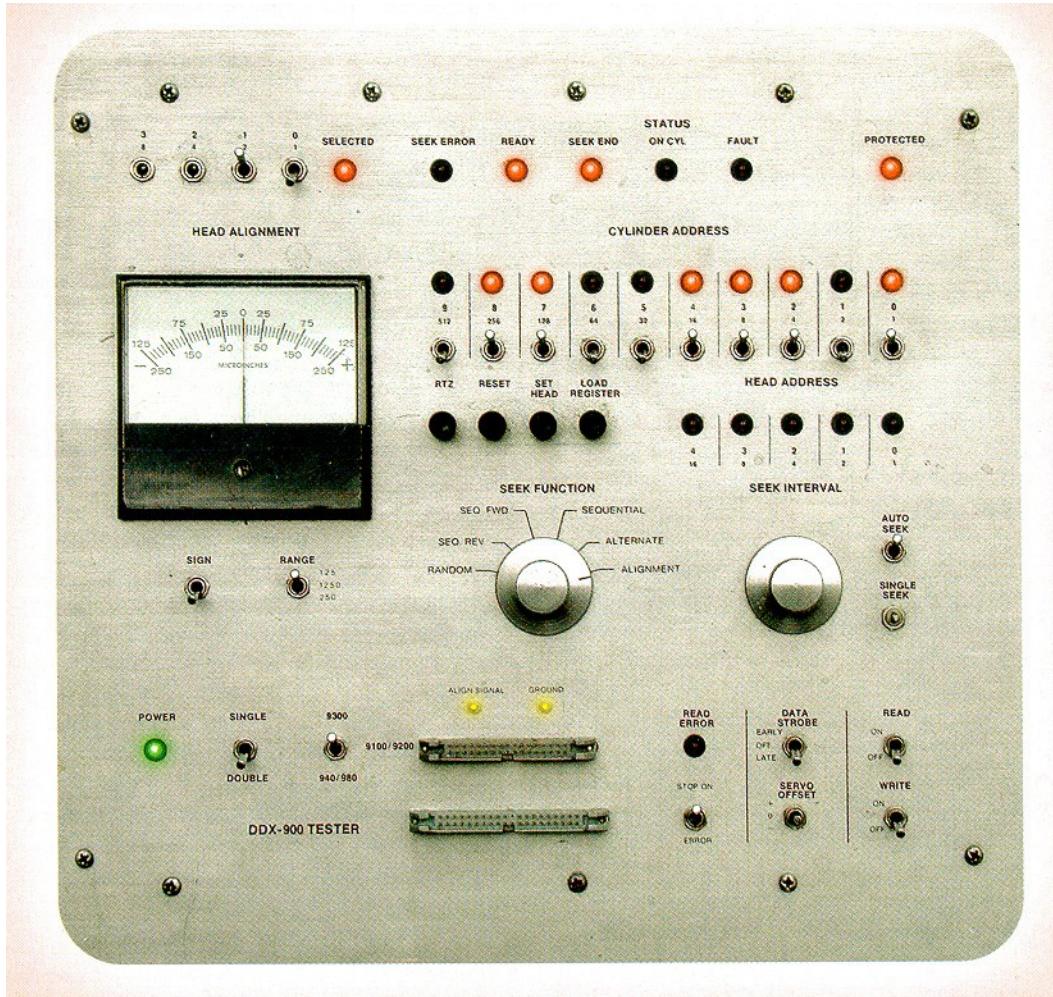
- 43% women
- 31% men

**Laumann, JAMA.
2000;281(6):537-544**

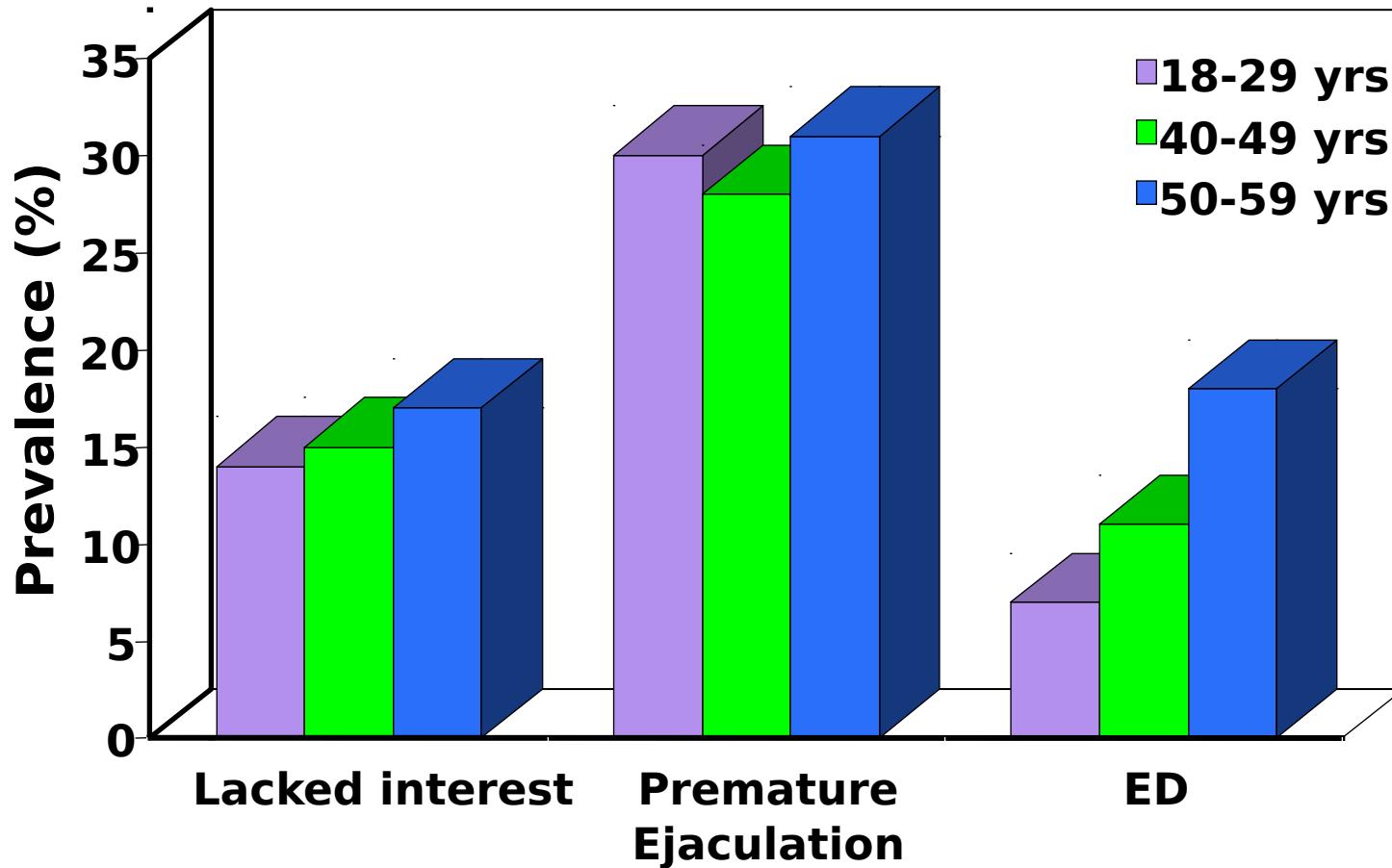
Male Sexuality



Female Sexuality



Prevalence of Male Sexual Dysfunction



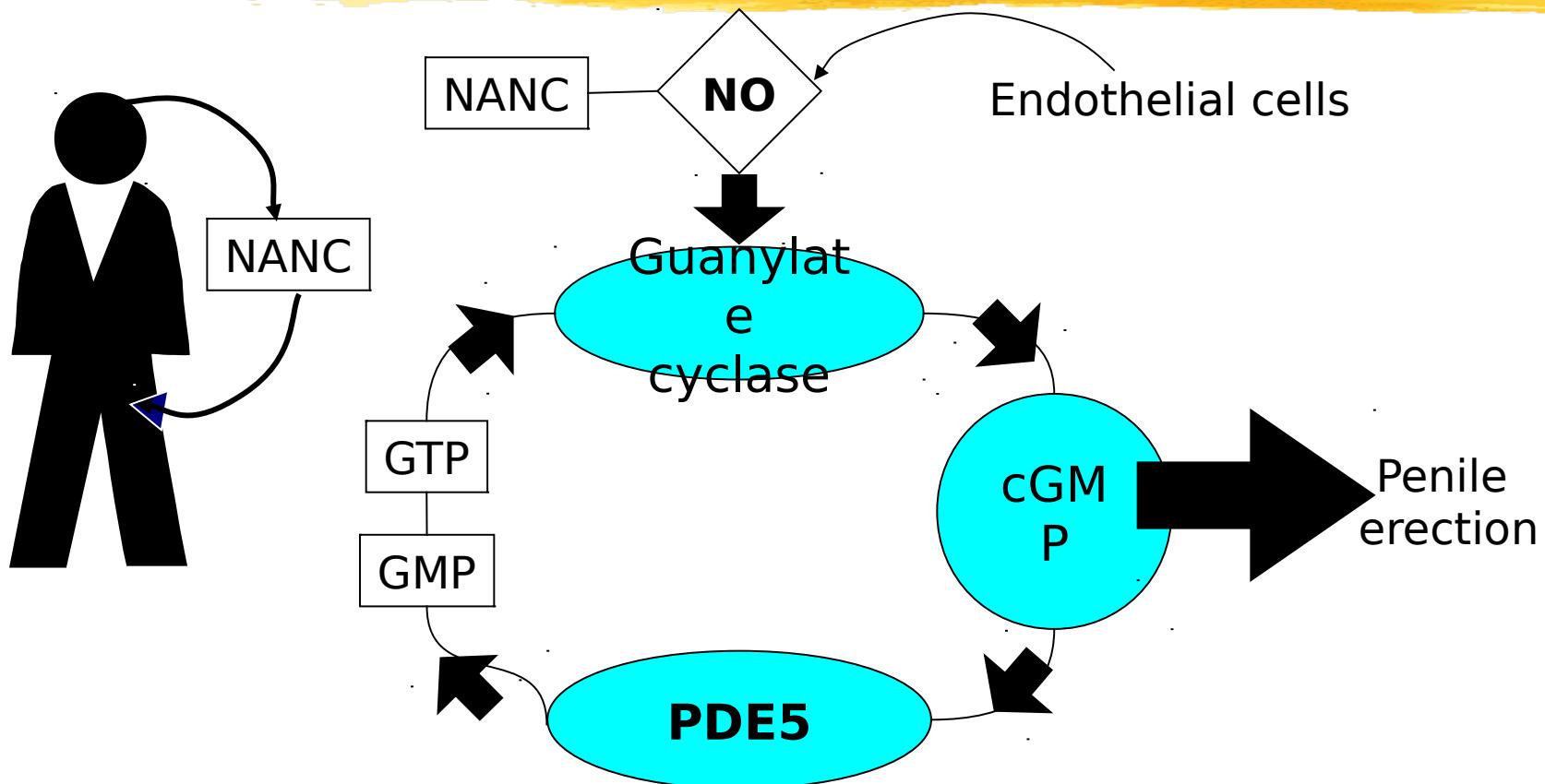
Erectile Dysfunction



Inability to attain or maintain an erection sufficient to result in satisfactory sexual intercourse.

** Feldman HA, et.al. Impotence and its medical and psychological correlates; results of the Massachusetts Male Aging Study. J Urol 1994;151:54-61

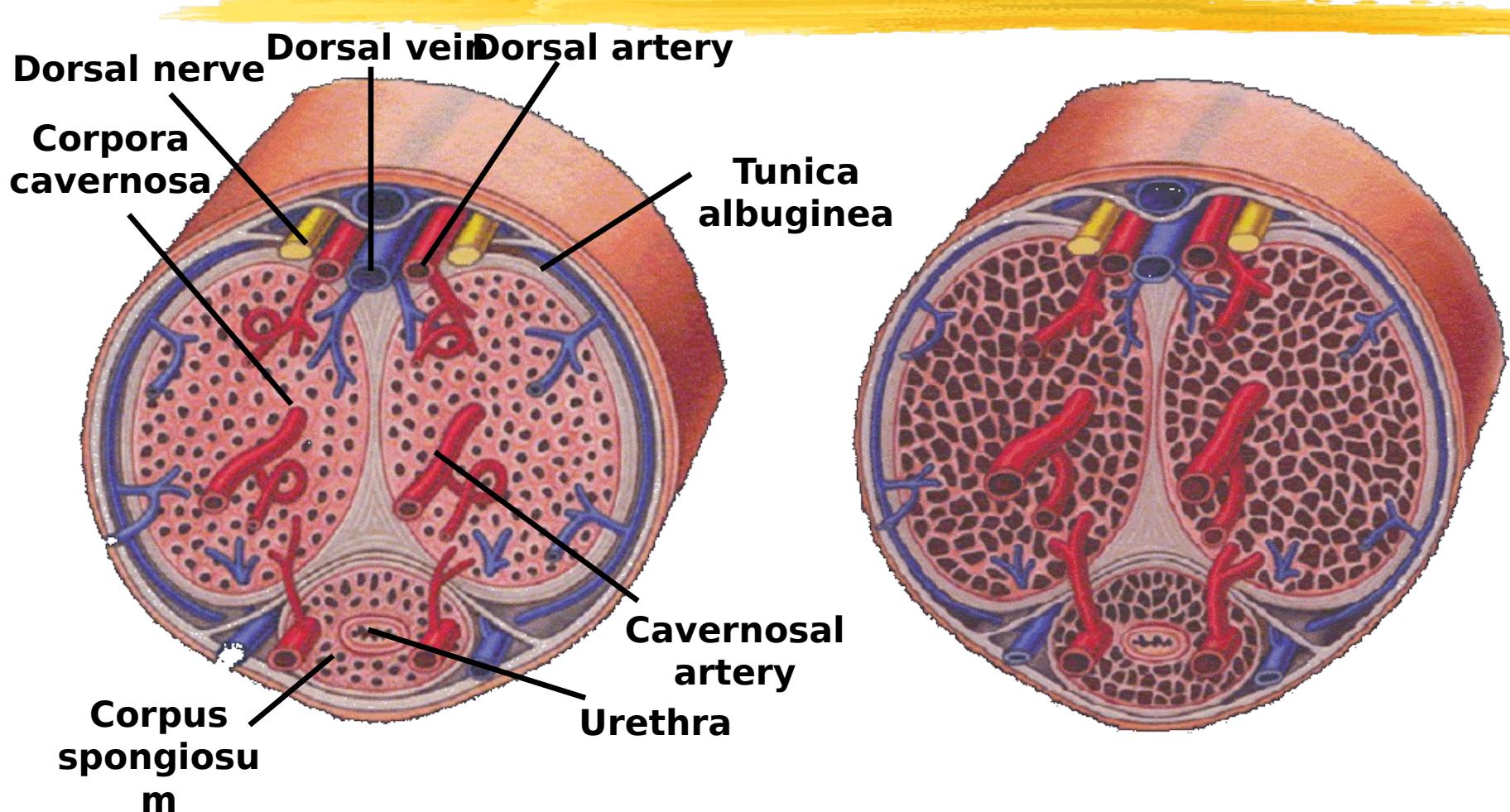
Mechanism of Erection Chemical Pathway



cGMP = cyclic guanosine monophosphate; GTP = guanosine triphosphate;
NO = nitric oxide; **PDE5** = phosphodiesterase type 5.

Adapted from Sadovsky R, et al. *Int J Clin Pract.* 2001;55:115-128.

Mechanism of Erection



Flaccid

Erect Penis

Conditions Associated with Erectile Dysfunction

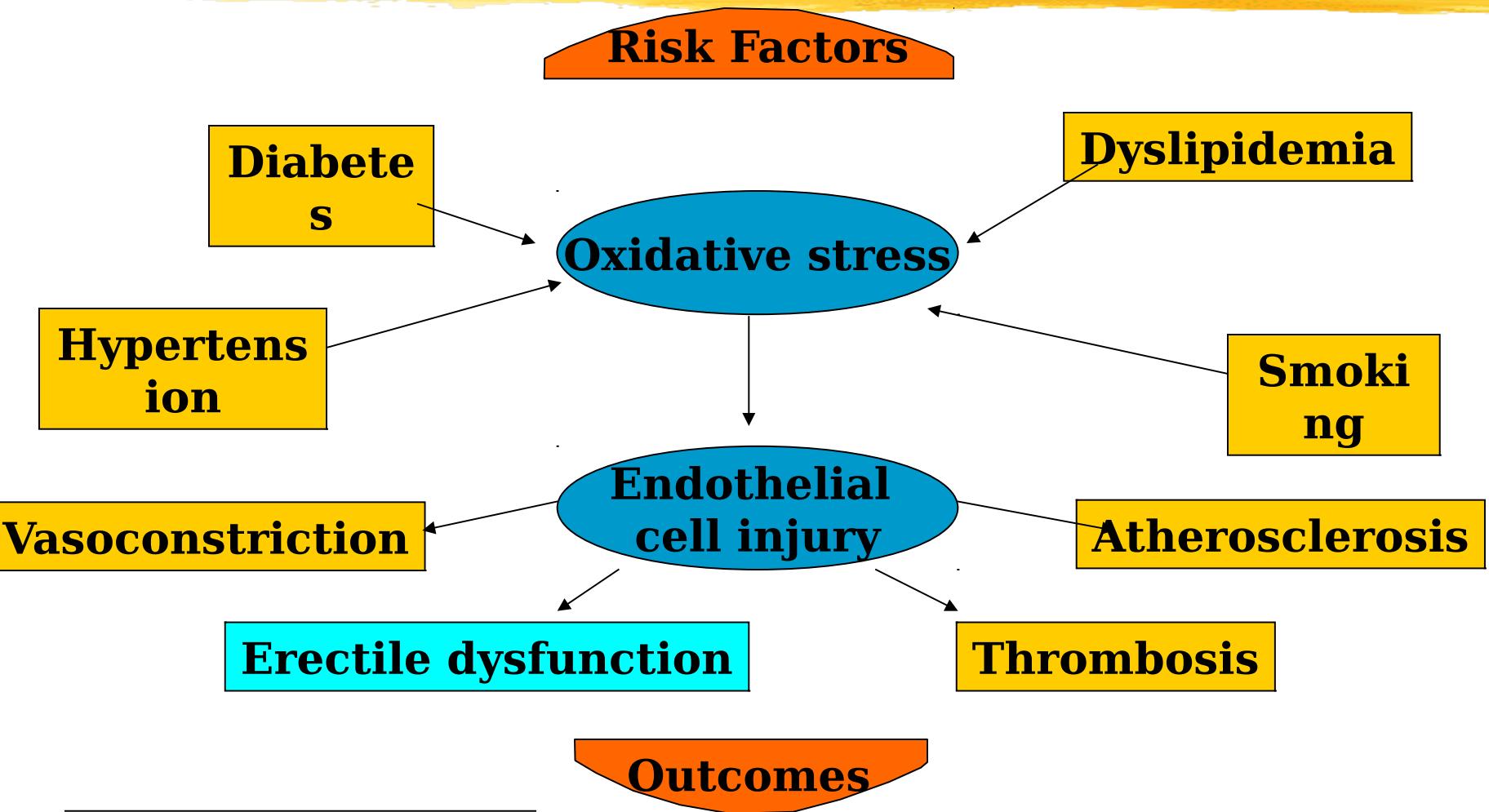
- **aging**
- **chronic illness**
 - diabetes mellitus
 - hypertension
 - dyslipidemia
- **endocrine d/o**
- **life style**
 - Smoking
- **LUTS / BPH**
- **neurologic d/o**
- **penile disorders**
 - Peyronie's dz
- **prescription meds**
 - hypertension meds
 - antidepressants
- **psychological d/o**
 - depression
 - anxiety
- **trauma /surgery**
 - spinal cord
 - pelvis

ED Classification



- | Psychogenic
- | Organic
 - | Vascular
 - | Neurologic
 - | Hormonal
- | ~ 80% w/ primarily organic etiology
- | Arterial vascular disease most common etiology

Vascular Dysfunction: ED Link



Dzau VJ, et al. Am J Cardiol. 1997;80(9A):33I-39I.

NIH Consensus Development Panel on Impotence. JAMA. 1993;270:83-90.

ED and Cardiovascular Dz



- 57% of men in one study who had bypass surgery had prior ED
- 64% of men in one study hospitalized for MI experienced prior ED
- ED is likely an indicator of systemic vascular disease and probably an early warning for increased risk of MI or stroke

Jackson G, et al. *Int J Clin Pract.* 1999;53:363-368.

Pritzker MR. Abstract presented at: Proceedings of the American Heart Association; 11/1999; Atlanta, Ga. Abstract 104561.

Wabrek AJ, et al. *Arch Sex Behav.* 1980;9:69-77.

Evaluation



ED often unrecognized

Inquire about sexual function

Thorough history

Focused physical exam

Limited (in most cases) lab testing

History



- | **define specific complaint**
 - | **altered interest / libido**
 - | **problems arousal / erection**
 - | **problems with orgasm**
 - | **problems with ejaculation**

History



- onset
 - age
 - rapid - gradual
- setting of dysfunction
 - global
 - certain circumstances
- quality of erections
 - partial
 - unable to sustain
- social situation
 - relationships
 - stresses
- associated chronic dz
- level of fitness/activity (fitness to engage in sexual activity)

Physical Examination



- **vital signs, appearance, affect**
- **secondary sexual features**
- **cardiovascular - cardiac,
peripheral**
- **focused neurologic - perineal /
perianal**
- **genital exam**

Lab Studies



- screen for unrecognized systemic disease
 - fasting blood sugar, lipid profile,
 - thyroid function, liver and renal function, urinalysis,
 - PSA
- screen for reversible cause
 - testosterone
 - Total (<300 ng/dl) vs free (< 50 pg/ml)

Treatment



- **Multiple effective treatment options available**
 - If man wants to regain erectile function, there is a way to make it happen.
- **Individualized, goal-directed therapy**

Address Reversible Causes



- **Medications**
 - | DC / Switch / Continue & Rx
- **Life Style Modification**
 - | quit smoking, exercise
 - | prevent / delay onset
 - | slow progression

Hormone (Testosterone) Replacement



- indicated for hypogonadism
- IM or topical
 - ▀ topical more sustained levels
 - ▀ oral not recommended
- greater impact on libido
- side effects
 - ▀ BPH / occult prostate CA

Oral Agents:



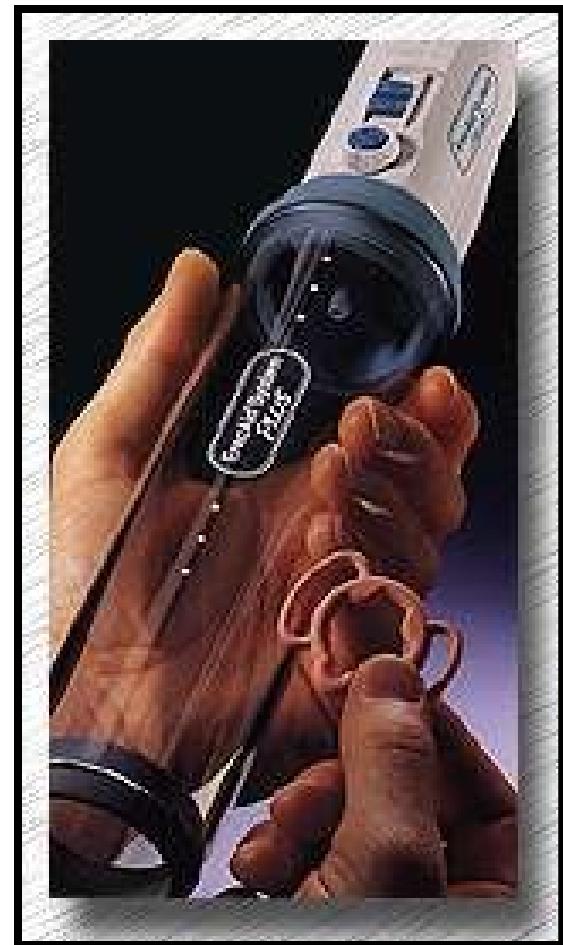
| PDE-5 Inhibitors

- | Sildenafil (Viagra®)
- | Vardenafil (Levitra®)
- | Tadalafil (Cialis®)
- | effective for most causes of ED
 - | most effective for mild-moderate ED
- | no spontaneous erection
 - | requires neural stimulation

Vacuum Constriction Device

- | +
 - | **effective**
 - | **safe**
 - | **inexpensive**

- | -
 - | **side-effects**
 - | **lack of spontaneity**
 - | **contraindications**

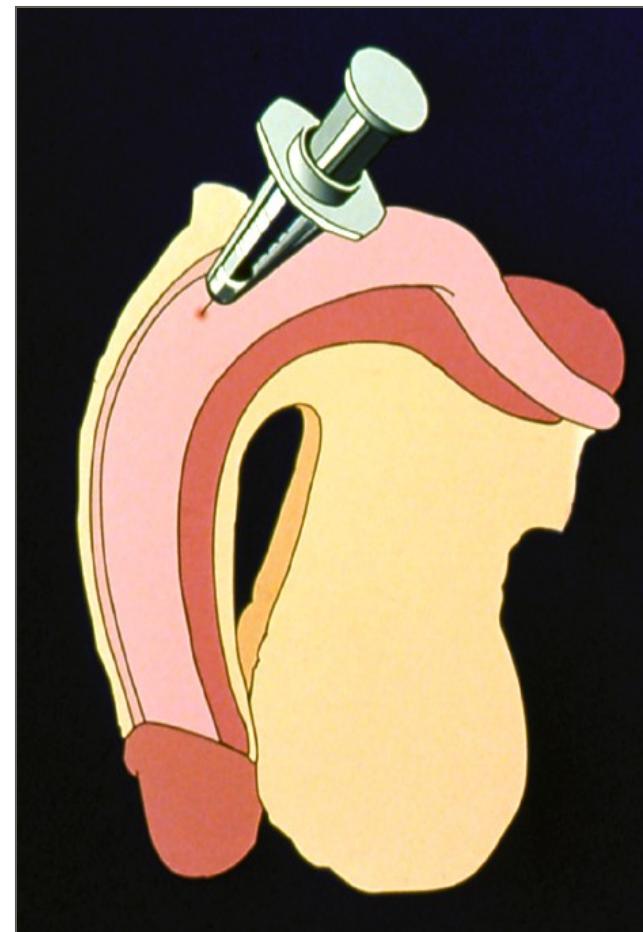


Intracavernosal Injection

■ alprostadil & other agents

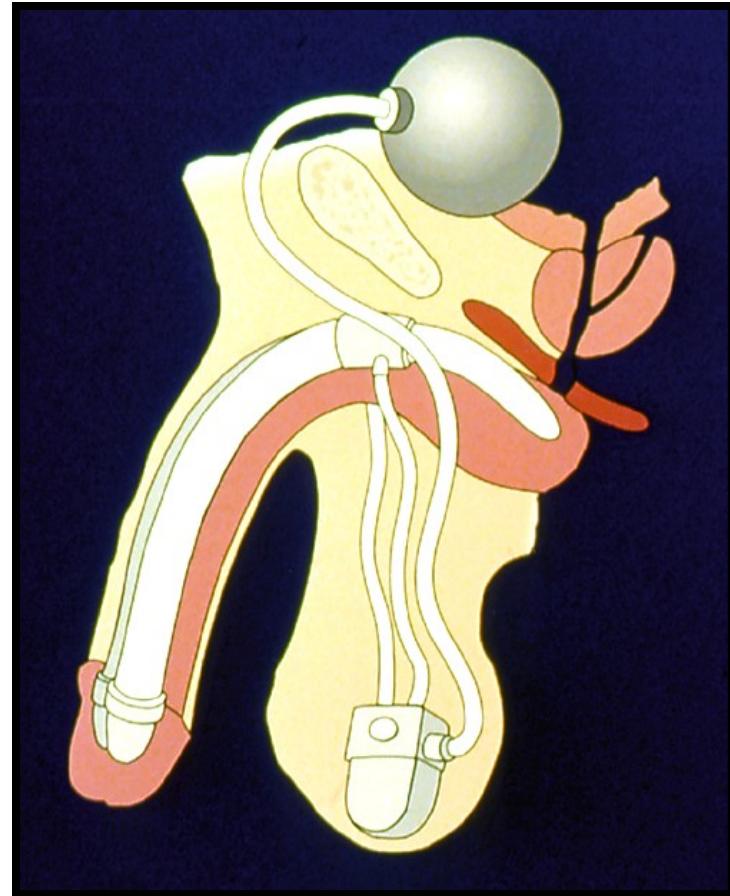
- +
 - effective
- -
 - shot in the penis
 - side-effects
 - cost

■ vasoactive



Penile Prosthesis

- Malleable implants
- Inflatable implants
- Invasive and costly
- High satisfaction rate if realistic expectations



Carson CC, et al. *J Urol.* 2000;164:376-380. Levine LA. *Am J Med.* 2000; 109(suppl 19A):3S-12S.
Levine LA, et al. *J Urol.* 2001;166:932-937. Sexton WJ, et al. *J Urol.* 1998;159:811-815.

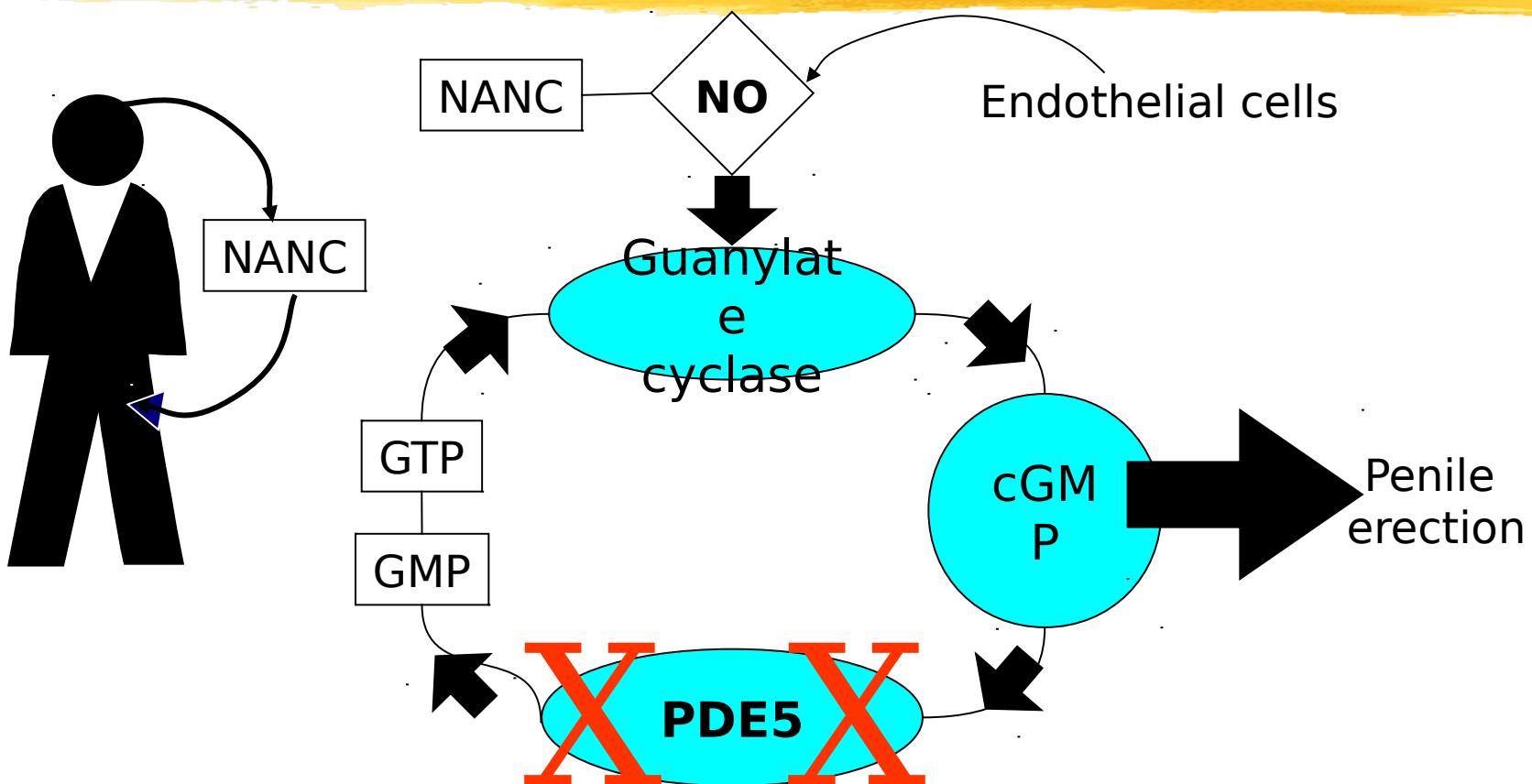
Oral Agents: PDE-5 Inhibitors



- **Sildenafil (Viagra®)**
- **Vardenafil (Levitra®)**
- **Tadalafil (Cialis®)**

- **Many more similarities than differences**

Mechanism of Action



cGMP = cyclic guanosine monophosphate; GTP = guanosine triphosphate;
NO = nitric oxide; PDE5 = phosphodiesterase type 5.

Adapted from Sadovsky R, et al. *Int J Clin Pract.* 2001;55:115-128.

Pharmacokinetics



	Vardenafil ¹ 20 mg	Sildenafil ² 100 mg	Tadalafil ² 20 mg
T _{1/2} , h	4.6	3.7	17.5
T _{max} , h*	0.8 (0.3-2.0)	1 (0.5-2)	2.0 (0.5-12)
Metabolism	CYP3A4 CYP3A5 CYP2C9	CYP3A4 CYP2C9	CYP3A4
Food Interaction	+		+

¹Klotz et al. ACCP. 2002;² As reported in Kim et al. *Formulary*. 2002;37.

*Median (range).

Clinical Effectiveness



- **No head-to-head comparisons**
- ~ **Similar levels of effectiveness**
- **All have demonstrated effectiveness in rx of most causes of ED**

Contraindications



- Nitrates
 - of any type
 - including poppers - amyl nitrate
- Alpha Blockers (terazosin -Hytrin®, tamsulosin -Flomax®, doxazosin - Cardura®, prazosin - Minipress®, or alfuzosin - Uroxatral®)
 - Vardenafil - all alpha blockers
 - Tadalafil - all alpha blockers
 - except .4mg tamsulosin (Flomax®)
- Certain military personnel i.e., aviators

Cautions



- | **Sildenafil and α -blocker use**
 - | **I don't dose within 4 hours of α blocker dose**
- | **Reduced dosing in pt on meds that inhibit hepatic metabolism**
 - | **Protease Inhibitors**
 - Ritonavir
 - | **Ketoconazole**
- | **Reduced dosing in patients with renal and hepatic dysfunction**

Adverse Event Profile



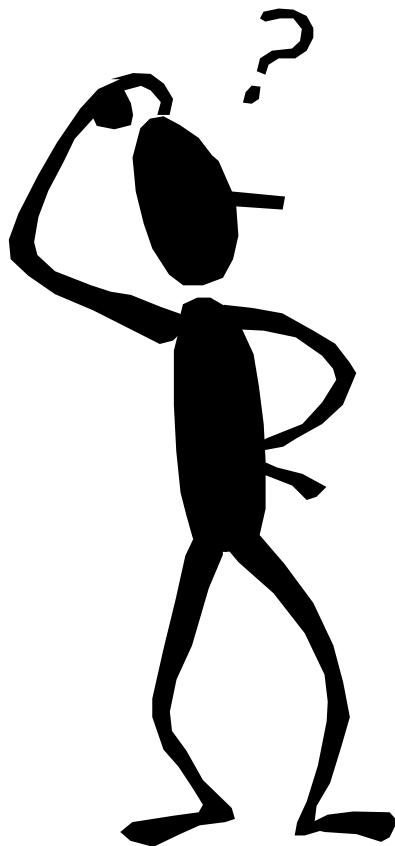
- Similar for PDE-5 inhibition manifestations
 - headache
 - flushing
 - dyspepsia
- Vision changes - blurring / color change most common w/ Sildenafil
- Back pain & myalgia most common with Tadalafil

Summary



- ED common among men
 - most commonly due to arterial vascular disease
 - appropriate evaluation hx /focused PE / limited testing in most instances.
 - safe and effective treatments available
- Sexual health issues are common
- Addressing them will result in better care of your patients.

Questions?



Dietary Supplements

